

IN THE CLAIMS:

Please add new Claims 51-55 as set forth below. The claims of record are not being amended herein. Note that all claims in the application are being reproduced below for the Examiner's convenience.

28. (Previously Amended) An optical system for forming an image of an object, said optical system comprising:

an optical element, which is deformed by the weight thereof; and

at least one optical member for preventing a change in optical performance of said optical system due to deformation of said optical element, when said optical element is provided in said optical system.

29. (Original) An optical system according to claim 28, wherein said at least one optical member has at least one aspherical surface.

33. (Previously Amended) A projection exposure apparatus comprising:

an illumination optical system for illuminating a pattern formed on a mask; and

a projection optical system for projecting the pattern of the mask onto a wafer, said projection optical system including (i) an optical element being deformed by the weight thereof, and (ii) at least one optical member for preventing a change in optical performance of said optical system due to deformation of said optical element, when said optical element is provided in said optical system.

34. (Original) A device manufacturing method including a process for transferring, through projection exposure, a pattern of a mask onto a wafer by use of a projection exposure apparatus as recited in claim 33.

38. (Previously Added) An optical system according to claim 28, wherein said optical element is a diffractive optical element.

39. (Previously Added) An optical system according to claim 28, wherein said at least one optical member has at least one aspherical surface.

40. (Previously Added) An apparatus according to claim 33, wherein said optical element is a diffractive optical element.

41. (Previously Added) An apparatus according to claim 33, wherein said at least one optical member has at least one aspherical surface.

42. (Previously Added) An optical system, comprising:
an optical element, said optical element being deformed by the weight thereof and having a refractive power; and
at least one optical member for preventing a change in optical performance of said optical system due to deformation of said optical element, when said optical element is provided in said optical system.

43. (Previously Added) An optical system according to claim 42, wherein the refractive power is a positive refractive power.

44. (Previously Added) An optical system according to claim 42, wherein the refractive power is a negative refractive power.

45. (Previously Added) An optical system according to claim 42, wherein said at least one optical member has at least one aspherical surface.

46. (Previously Added) An optical system according to claim 45, further comprising a second optical element juxtaposed to said optical element, wherein said at least one aspherical surface is provided on said second optical element.

47. (Previously Added) An optical system according to claim 42, wherein said optical element is a diffractive optical element.

48. (Previously Added) An optical system according to claim 42, wherein said optical element has a step-like shape.

49. (Previously Added) A projection exposure apparatus, comprising:
an illumination optical system for illuminating a pattern formed on a mask; and

a projection optical system for projecting light from the pattern, said projection optical system including an optical system as recited in claim 42.

50. (Previously Added) A device manufacturing method including a process for transferring, through projection exposure, a pattern of a mask onto a wafer by use of a projection exposure apparatus as recited in claim 49.

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--51. (New) An optical system for forming an image of an object, said optical system comprising:
an optical element being able to be deformed by the weight thereof; and
at least one optical member having an aspherical surface effective to prevent a change in optical performance of said optical system due to deformation of said optical element as said optical element is provided in said optical system, said at least one optical member being disposed adjacent to said optical element.

52. (New) An optical system according to claim 51, wherein said optical element is a diffractive optical element.

53. (New) An optical system according to claim 51, wherein said optical element has a step-like shape.

54. (New) A projection exposure apparatus, comprising:

an illumination optical system for illuminating a pattern formed on a mask; and
a projection optical system for projecting light from the pattern, said projection
optical system including an optical system as recited in claim 51.

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Contd 55. (New) A device manufacturing method including a process for
transferring, through projection exposure, a pattern of a mask onto a wafer by use of a projection
exposure apparatus as recited in claim 54.--
